

REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested.

The specification is amended by the present response to correct minor informalities. The changes made to the specification are deemed to be self-evident from the original disclosure, and thus are not deemed to raise any issues of new matter. Further, the citation at page 3, lines 5-6 is believed to be proper as it merely references the applied art to Matsumura noted below. Claim 14 is also amended by the present response to clarify the recitation at line 9, to address the objections thereto.

Claims 1-17 are pending in this application. Claim 18 is canceled by the present response without prejudice. Claims 1-18 were rejected under 35 U.S.C. § 112, second paragraph. Claims 1-17 were rejected under 35 U.S.C. § 103(a) as unpatentable over “Optimization of phase-modulated excimer-laser annealing method for growing highly-packed large-grains in Si thin-films”, to Matsumura et al. (herein “Matsumura”) in view of EP 1 047 119 A2 to Masafumi et al. (herein “EP 1 047 119”). Claim 18 was rejected under 35 U.S.C. § 103 as clearly anticipated by U.S. patent 6,846,617 to Pierrat or U.S. patent 6,583,855 to Krikke et al. (herein “Krikke”).

Applicants note the rejection to claim 18 is obviated by the present response as claim 18 is canceled by the present response without prejudice.

Applicant and applicants’ representative wish to Examiner Rosasco for the interview granted applicants’ representative on September 19, 2005. During the interview, the outstanding rejections were discussed in detail. Further, claim amendments were discussed to clarify certain claim features. The present response sets forth the discussed claim amendments. Examiner Rosasco indicated such amended claims in view of comments presented during the interview and set forth below would appear to address the current rejections.

Addressing now the rejection of claims 1-18 under 35 U.S.C. § 112, second paragraph, that rejection is traversed by the present response.

The claims are amended by the present response to no longer refer to “first and second axial lines”. The claims now refer to a first direction and a second direction. Such features are fully shown for example in Figures 3 and 7 in the present specification showing a phase shift mask having a boundary area 11 that extends across the shift mask in a first direction, and first and second areas 12 and 13 formed on opposite sides of the boundary area 11 in a second intersecting direction. Thus, with reference to Figures 3 and 7 in the present specification as a non-limiting example, the first direction is from the top to the bottom of the page and the second direction is across the page. The claims as currently written are believed to clearly set forth definite subject matter, and thus amended claims 1-17 are believed to be in full compliance with all requirements under 35 U.S.C. § 112, second paragraph.

Addressing now the rejection of claims 1-17 under 35 U.S.C. § 103(a) as unpatentable over Matsumura in view of EP 1 047 119, that rejection is traversed by the present response.

Applicants respectfully submit no combination of teachings of Matsumura in view of EP 1 047 119 discloses a specific structure of a phase shift mask having the boundary area, and first and second areas, as claimed. With reference to Figures 3 and 7 of the present specification as a non-limiting example, a phase shift mask according to the claimed invention includes a boundary area 11 and first and second areas 12 and 13 on opposite sides of the boundary area 11. Those first and second areas 12, 13 have a predetermined phase difference therebetween. Further, the boundary area 11 has a phase distribution that varies from a phase of the first area 12 to a phase of the second area 13 in the second direction. In contrast to a such a claim structure, attention is directed to Figure 5 in the present specification showing a background art that includes only a phase shift portion 20 where a phase is abruptly shifted. In contrast to such a structure in the background art of Figure 7, the

present invention such as shown in Figures 3A, 3B, 7A and 7B has a boundary area 11 that has a phase distribution between a phase of areas on opposite sides of the boundary area. Such is clearly not the case in the admitted art for example in Figure 5 because only a single phase shift portion 20 is utilized.

The basis for the outstanding rejection recognizes that Matsumura does not disclose the specifics of the “phase shift mask” having both a boundary area and the first and second areas as claimed, and specifically the outstanding Office Action recognizes:

The teachings of Matsumura et al. differ from those of the applicant in that the applicant teaches a boundary area having a phase distribution which varies from a phase of the first area to a phase of the second area along the second axial line.¹

To overcome such recognized deficiencies in Matsumura, the outstanding Office Action cites EP 1 047 119, and particularly references claim 4 disclosing a phase shift mask 55a that diffracts the laser beam 50 to form a cyclic light-and-dark pattern. However, in that respect applicants note the disclosure in EP 1 047 119 in Figure 11 showing the phase shift mask 55a is essentially identical to that in Figure 5 in the present specification. As shown in Figure 11 of EP 1 047 119, and as discussed in the present specification with respect to Figure 5, such devices merely provide an abrupt phase shift portion. Such structures result in a light intensity being substantially 0 at a position corresponding to the phase shift portion, and the light intensity is only one-dimensionally increased towards the lateral direction.²

The claims as currently written require a different structure than as in EP 1 047 119. In the claims as currently written the boundary area has a phase distribution that varies from a phase of a first area on one side of the boundary area to a phase of the second area on an opposite of the boundary area. Again with reference to Figures 3 and 7 of the present specification as a non-limiting example, the boundary area 11 has a phase distribution that

¹ Office Action of June 28, 2005, middle of page 4.

² See for example the present specification at page 23, lines 15-24.

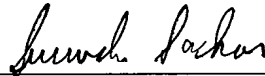
varies from a phase of the first area 12 to a phase of the second area 13. EP 1 047 119 does not disclose any similar structure. Thus, the teachings in EP 1 047 119 do not overcome the recognized deficiencies in Matsumura.

In such ways, the claims as currently written are believed to distinguish over the combination of teachings of Matsumura in view of EP 1 047 119.

As no other issues are pending in this application, it is respectfully submitted that the present application is now in condition for allowance, and it is hereby respectfully requested that this case be passed to issue.

Respectfully submitted,

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